Log Event A

Borehole # 40-11-08

Borehole Information

Farm : S	**Tank :** S-111	**Site Number :** 299-W23-207
N-Coord : 35,900	**W-Coord :** 75,815	**TOC Elevation :** 663.00
Water Level, ft : 97.80	**Date Drilled :** 3/31/1976	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
This borehole was drilled in February and March 1976 to a depth of 105 ft and completed at a depth of 100 ft with 6-in.-diameter steel casing. The driller's log indicates that the bottom 5 ft of the borehole and the annular space around the upper 20 ft of the casing were grouted. The driller's log contains no mention of perforations. The casing thickness is assumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

The top of the casing is approximately even with the ground surface. The casing lip is the zero reference for the SGLS logs.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 05/1996	**Calibration Reference :** GJPO-HAN-5	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number :	1	**Log Run Date :**	07/18/1996	**Logging Engineer:**	Bob Spatz
Start Depth, ft.:	97.5	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	25.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	2	**Log Run Date :**	07/19/1996	**Logging Engineer:**	Bob Spatz
Start Depth, ft.:	26.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	0.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

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Analysis Information

Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787 Analysis Date : 04/10/1997

Analysis Notes :

This borehole was logged in two log runs. A centralizer was used during both runs. The pre- and post-survey field verification spectra met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the field verification spectra that best matched the data were used to establish the channel-to-energy parameters used in processing the spectra acquired during the log runs.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Cs-137 was the only man-made radionuclide detected in this borehole. Cs-137 contamination was detected continuously from the ground surface to a depth of 1 ft. The maximum Cs-137 concentration measured was 0.4 pCi/g at a depth of 0.5 ft. A higher apparent concentration of about 23 pCi/g was detected at the ground surface.

The logs of the naturally occurring radionuclides show an increase in the K-40 concentration at a depth of 18.5 ft. The K-40 and Th-232 concentrations increase at a depth of about 46.5 ft. The K-40 concentration increases between depths of 52 and 54 ft, decreases between 54 and 60 ft, and decreases again between 60 and 65 ft. The concentrations of all the naturally occurring radionuclides increase below a depth of about 66 ft.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Reports for tanks S-111 and S-112.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.